

APPENDIX  
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

**Claim 13 is canceled.**

**The claims are amended as follows:**

7. (Thrice amended) An oxirane derivative represented by the following general formula (2) prepared by aminating or carboxylating an oxirane derivative of formula (1) [having a purity as defined in Claim 1 or Claim 2]:



wherein R represents a C<sub>1-7</sub> hydrocarbon group; n represents an integer of from 20 to 900; X represents a C<sub>1-3</sub> hydrocarbon group or -CO(CH<sub>2</sub>)<sub>q</sub>- (in which q is an integer of from 2 to 4); Y represents an amino group or carboxyl group; and p represents 0 or 1, wherein said oxirane derivative of formula (1) satisfies the following requirements when subjected to gel permeation chromatography and thin layer chromatography:

(A) Supposing that the straight line between the elution starting point and the elution end point on chromatogram obtained by gel permeation chromatography is PbaseL, the total peak area above PbaseL is Parea, the height of the top of the maximum peak of refractive index: Ptop, with respect to PbaseL is PtopH, and the peak area between the point at which the height of the elution curve from the elution starting point toward Ptop, with respect to PbaseL is 1/5 of PtopH and the point at which the height of the elution curve from Ptop toward the elution end point,

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with respect to PbaseL is 1/5 of PtopH is PareaM, Parea and PareaM satisfy the following relationship:

$$\text{PareaM/Parea} \geq 0.85$$

; and

(B) When thin layer chromatography is effected by development with a 85 : 15 (by volume) mixture of chloroform and methanol, followed by color development with iodine and measurement of the purity of various spots by a densitometer, main spots having Rf value falling within the range of from 0.2 to 0.8 have a purity of not less than 98%.

11. (Twice amended) An oxirane derivative represented by the following general formula (2) prepared by aminating or carboxylating an oxirane derivative of formula (1) [having a purity as defined in Claim 3]:



wherein R represents a C<sub>1-7</sub> hydrocarbon group; n represents an integer of from 20 to 900; X represents a C<sub>1-3</sub> hydrocarbon group or -CO(CH<sub>2</sub>)<sub>q</sub>- (in which q is an integer of from 2 to 4); Y represents an amino group or carboxyl group; and p represents 0 or 1, wherein said oxirane derivative of formula (1) satisfies the following requirements when subjected to gel permeation chromatography and thin layer chromatography:

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(A) Supposing that the straight line between the elution starting point and the elution end point on chromatogram obtained by gel permeation chromatography is PbaseL, the total peak area above PbaseL is Parea, the height of the top of the maximum peak of refractive index: Ptop, with respect to PbaseL is PtopH, and the peak area between the point at which the height of the elution curve from the elution starting point toward Ptop, with respect to PbaseL is 1/5 of PtopH and the point at which the height of the elution curve from Ptop toward the elution end point, with respect to PbaseL is 1/5 of PtopH is PareaM, Parea and PareaM satisfy the following relationship:

$$\text{PareaM/Parea} \geq 0.85$$

; and

(B) When thin layer chromatography is effected by development with a 85 : 15 (by volume) mixture of chloroform and methanol, followed by color development with iodine and measurement of the purity of various spots by a densitometer, main spots having Rf value falling within the range of from 0.2 to 0.8 have a purity of not less than 98%,

wherein the number of moles of oxirane added PtopEOmol determined by the following equation:

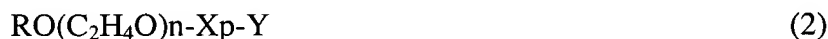
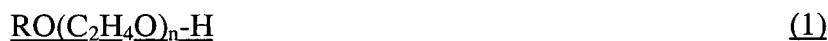
$$\text{PtopEOmol} = (\text{PtopMw} - \text{ROHMw}) / 44$$

supposing that the molecular weight corresponding to the top of a peak on a chromatogram is PtopMw and the molecular weight of the compound ROH (in which R represents a C<sub>1-7</sub> hydrocarbon atom) to be used as a starting material is ROHMw, satisfies the following

relationship with the ratio PMmw/mn of weight-average molecular weight to number-average molecular weight of the region represented by PareaM determined by gel permeation chromatography:

$$\text{PMmw/mn} - [1 + \text{PtopEOmol}/(1 + \text{PtopEOmol})^2] \leq 0.02.$$

12. (Twice amended) An oxirane derivative represented by the following general formula (2) prepared by aminating or carboxylating an oxirane derivative of formula (1) [having a purity as defined in Claim 4]:



wherein R represents [a C<sub>1-7</sub> hydrocarbon group] CH<sub>3</sub>; n represents an integer of from 20 to 900; X represents a C<sub>1-3</sub> hydrocarbon group or -CO(CH<sub>2</sub>)<sub>q</sub>- (in which q is an integer of from 2 to 4); Y represents an amino group or carboxyl group; and p represents 0 or 1, wherein said oxirane derivative of formula (1) satisfies the following requirements when subjected to gel permeation chromatography and thin layer chromatography:

(A) Supposing that the straight line between the elution starting point and the elution end point on chromatogram obtained by gel permeation chromatography is PbaseL, the total peak area above PbaseL is Parea, the height of the top of the maximum peak of refractive index: Ptop, with respect to PbaseL is PtopH, and the peak area between the point at which the height of the elution curve from the elution starting point toward Ptop, with respect to PbaseL is 1/5 of PtopH and the point at which the height of the elution curve from Ptop toward the elution end point,

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with respect to PbaseL is 1/5 of PtopH is Paream, Parea and Paream satisfy the following relationship:

$$\text{PareaM/Parea} \geq 0.85$$

; and

(B) When thin layer chromatography is effected by development with a 85 : 15 (by volume) mixture of chloroform and methanol, followed by color development with iodine and measurement of the purity of various spots by a densitometer, main spots having Rf value falling within the range of from 0.2 to 0.8 have a purity of not less than 98%,

wherein the number of moles of oxirane added PtopEOmol determined by the following equation:

$$\text{PtopEOmol} = (\text{PtopMw} - \text{ROHMw}) / 44$$

supposing that the molecular weight corresponding to the top of a peak on a chromatogram is PtopMw and the molecular weight of the compound ROH (in which R is CH<sub>3</sub>) to be used as a starting material is ROHMw, satisfies the following relationship with the ratio PMmw/mn of weight-average molecular weight to number-average molecular weight of the region represented by Paream determined by gel permeation chromatography:

$$\text{PMmw/mn} - [1 + \text{PtopEOmol}/(1 + \text{PtopEOmol})^2] \leq 0.02.$$

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14. (Amended) A process for the preparation of an oxirane derivative represented by formula (2), which comprises aminating or carboxylating an oxirane derivative of formula (1) [having a purity as defined in Claim 1 or Claim 2]:



wherein R represents a  $\text{C}_{1-7}$  hydrocarbon group; n represents an integer of from 20 to 900; X represents a  $\text{C}_{1-3}$  hydrocarbon group or  $-\text{CO}(\text{CH}_2)_q-$  (in which q is an integer of from 2 to 4); Y represents an amino group or carboxyl group; and p represents 0 or 1, wherein said oxirane derivative of formula (1) satisfies the following requirements when subjected to gel permeation chromatography and thin layer chromatography:

(A) Supposing that the straight line between the elution starting point and the elution end point on chromatogram obtained by gel permeation chromatography is PbaseL, the total peak area above PbaseL is Parea, the height of the top of the maximum peak of refractive index: Ptop, with respect to PbaseL is PtopH, and the peak area between the point at which the height of the elution curve from the elution starting point toward Ptop, with respect to PbaseL is 1/5 of PtopH and the point at which the height of the elution curve from Ptop toward the elution end point, with respect to PbaseL is 1/5 of PtopH is PareaM, Parea and PareaM satisfy the following relationship:

$$\text{PareaM/Parea} \geq 0.85$$

; and

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(B) When thin layer chromatography is effected by development with a 85 : 15 (by volume) mixture of chloroform and methanol, followed by color development with iodine and measurement of the purity of various spots by a densitometer, main spots having Rf value falling within the range of from 0.2 to 0.8 have a purity of not less than 98%.

15. (Amended) A process for the preparation of an oxirane derivative represented by formula (2), which comprises aminating or carboxylating an oxirane derivative of formula (1) [having a purity as defined in Claim 3]:



wherein R represents a C<sub>1-7</sub> hydrocarbon group; n represents an integer of from 20 to 900; X represents a C<sub>1-3</sub> hydrocarbon group or -CO(CH<sub>2</sub>)<sub>q</sub>- (in which q is an integer of from 2 to 4); Y represents an amino group or carboxyl group; and p represents 0 or 1, wherein said oxirane derivative of formula (1) satisfies the following requirements when subjected to gel permeation chromatography and thin layer chromatography:

(A) Supposing that the straight line between the elution starting point and the elution end point on chromatogram obtained by gel permeation chromatography is PbaseL, the total peak area above PbaseL is Parea, the height of the top of the maximum peak of refractive index: Ptop, with respect to PbaseL is PtopH, and the peak area between the point at which the height of the elution curve from the elution starting point toward Ptop, with respect to PbaseL is 1/5 of PtopH and the point at which the height of the elution curve from Ptop toward the elution end point,

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with respect to PbaseL is 1/5 of PtopH is PareaM, Parea and PareaM satisfy the following relationship:

$$\text{PareaM/Parea} \geq 0.85$$

; and

(B) When thin layer chromatography is effected by development with a 85 : 15 (by volume) mixture of chloroform and methanol, followed by color development with iodine and measurement of the purity of various spots by a densitometer, main spots having Rf value falling within the range of from 0.2 to 0.8 have a purity of not less than 98%,

wherein the number of moles of oxirane added PtopEOMol determined by the following equation:

$$\text{PtopEOMol} = (\text{PtopMw} - \text{ROHMw}) / 44$$

supposing that the molecular weight corresponding to the top of a peak on a chromatogram is PtopMw and the molecular weight of the compound ROH (in which R represents a C<sub>1-7</sub> hydrocarbon atom) to be used as a starting material is ROHMw, satisfies the following relationship with the ratio PMmw/mn of weight-average molecular weight to number-average molecular weight of the region represented by PareaM determined by gel permeation chromatography:

$$\text{PMmw/mn} - [1 + \text{PtopEOMol}/(1 + \text{PtopEOMol})^2] \leq 0.02.$$

**Claims 16-43 are added as new claims.**